

REMARKS/ARGUMENTS

Applicants thank Examiner Pezzuto for the helpful and courteous discussion of November 16, 2005. The discussion included an observation that the recitation of the transparent plastic's improved properties in the claims may bring the claims into condition for allowance.

Presently pending Claims 1-20 stand rejected in view of a patent to Bader (U.S. 5,384,379). The Bader patent corresponds to German application DE 4234251. The DE 4234251 patent was discussed extensively in the Amendment filed in the present case on July 18, 2005. The Bader disclosure must be considered for several important points with respect to the patentability of the presently claimed subject matter; namely: (1) Bader requires that 1 mol of a dithiol (which may be encompassed by the polythiol recited in present Claims 1 and 12) must be reacted with at least 2 mols of a compound which may correspond to formula (III) of present Claims 1 and 12, and (2) the transparent plastics obtained by the process of DE 4234251 have a refractive index in the range of from 1.602 to 1.608 and an ABBE number of between 35 and 38.

The process of Bader is different from the claimed process at least because the presently claimed process excludes Bader's [compound of formula (IV)/compound of formula (III)] mol ratio, and the plastic materials obtained by the process of Bader are inferior with respect to optical properties including refractive index ( $n_D$ ) and ABBE number.

In this regard, Applicants draw the Office's attention to new dependent Claims 21-34. The new dependent claims further limit the claimed process by reciting a narrow ranges for the [compound of formula (III)/compound of formula (IV)] mol ratio and/or state that the product obtained from the reaction must have particular optical characteristics such as a refractive index of greater than 1.61 and/or an ABBE number of greater than 38.

With respect to the rejection of record, the Office states the following:

The examiner is of the position that when the claimed range and the prior art range are very similar (i.e., less than 2 vs. 2), the range of the prior art establishes prima facie obviousness because one of ordinary skill in the art would have expected the closely similar ranges to have the same or essentially the same properties. (Page 3 of the Office Action of October 3, 2005).

As was stated in the response filed to the previous Office Action, Applicants have already provided a direct comparison of the presently claimed invention with the prior art cited by the Office (i.e., Bader and DE 4234251). Even though Applicants provided a side-by-side comparison with the closest prior art, the Office maintained the rejection of the claims as obvious.

The above-mentioned side-by-side comparison is asserted as insufficient by the Office. The Office asserts that even when Applicants compare the claimed invention with the closest prior art. Thus, the Office appears to take the position that Applicant's showing of superiority and/or unexpected results is insufficient for demonstrating the patentability of the claimed invention. It appears that the Office is stating that Applicants' showing of superior and/or unexpected results can only be commensurate in scope with the claimed subject matter when "many variables" are compared. As mentioned above, Applicants provided a side-by-side comparison with the prior art. The showing of unexpected results is therefore commensurate in scope with the rejection. Applicants submit that the Office's rejection of the present claims as obvious over Bader in light of Applicants' side-by-side comparison is not commensurate in scope with the prior art.

On the one hand the Office asserts that the claimed invention is not patentable over Bader. On the other than the Office asserts that a side-by-side comparison with Bader is not commensurate in scope with the claims. How can the Office continue to assert obviousness in view of prior art against which the claimed invention has been shown to be superior? Does the prior art contain broader disclosure than that already cited? Applicants submit that a closer comparison than that already presented is not possible and the Office's extension of

Bader's disclosure beyond what is disclosed in the patent is not commensurate in scope with Bader.

Bader discloses particular examples of processes for preparing transparent plastics. Applicants compare a particular example of Bader (i.e., Example VB1 of the present specification) with the claimed invention and demonstrate that the claimed invention is able to provide a plastic material having improved refractive index and ABBE number. What can be a better comparison of the prior art than a direct, side-by-side comparison such as Applicants have provided in the present case?

The Office states on page 4 that the comparative evidence is not "clear and convincing". Applicants submit that this is not the correct evidentiary standard for determining the patentability of the claimed invention. Applicants are only obligated to demonstrate the patentability of the claimed invention by a preponderance of evidence. Applicants submit that a direct and side-by-side comparison of the claimed invention with the prior art provides real, substantial evidence that the claimed invention is patentable over the prior art. The Office provided no rebuttal to this evidence but instead provides only an unsupported assertion of unpatentability and cites the incorrect evidentiary standard.

Moreover, it appears that the Office is asserting that the superior properties must be recited in the claims. This is not correct. The U.S. patent laws contain no requirement that Applicants must recite the improved (e.g., unexpected) properties in the claims.

Thus, the basis for the rejection as reflected in the Office Action of October 3, 2005 is incorrect as a matter of law and should be withdrawn.

Ordinarily, in order for an Applicant to rebut a *prima facie* case of obviousness, the Applicant must provide evidence of superior and/or unexpected results that are commensurate in scope of the claimed subject matter. The present case is, however, somewhat different. The present claims do not overlap with the prior art. The Office asserts

a *prima facie* case of obviousness based only upon the Examiner's opinion that because the claimed range and the prior art range are close that one would be obvious in view of the other.

Applicants submit that this ignores the basic difference in the claimed subject matter in comparison to the prior art. The prior art and the presently claimed invention are mutually exclusive. Thus, there can be no *prima facie* case of obviousness until the Office has provided a reason why the claimed range is obvious in view of the prior art range. The Office's assertion that one of ordinary skill in the art would have expected closely similar ranges to have the same properties is unfounded and unsupported.

Applicants draw the Office's attention to *In re Lee* 61USPQ2d 1430 (Fed. Cir. 2002) wherein the Federal Circuit made it clear that rejections must be based upon factual evidence and not merely the opinion of an Examiner (i.e., the Office cannot rely on "common knowledge and common sense" in the absence of factual information). *Lee* applies here, even though the claimed invention and the prior art are mutually exclusive, the Office asserts that one makes the other obvious. Applicants submit that prior art disclosure that expressly excludes the claimed invention cannot render the claimed invention obvious. Thus the Office's assertion of obviousness is based only upon the Examiner's opinion and the Office has not supported the rejection with any evidence or factual information in violation of the Federal Circuit's ruling in *Lee*.

Below, the information used to demonstrate the superiority of the claimed invention over Bader is reproduced.

Applicants provided comparative data in the present specification to show that the process of the present claims provides a different product than the process of Bader.

Applicants draw the Office's attention to Table 3 on page 30 of the specification:

Table 3: characterization of product mixtures

	$n_D^{20}$	Colour	MAA [mol%]	EDTDMA [mol%]	Mono- adducts [mol%]	Diadducts [mol%]	Tri- adducts [mol%]
VB1	1.5645	colourless		52.3	27.4	6.6	5.8
VB2	1.5600	colourless	4.5	58.5	23.3	6.3	2.4
VB3	1.5571	yellow	< 1	71.4	18.9	2.6	< 1
B1	1.5700	yellow	< 1	37.9	37.5	13.2	5.9
B2	1.5704	colourless		39.2	36.3	14.4	6.3
B3	1.5733	colourless	< 1	29.6	38.8	13.9	8.0
B4	1.5729	colourless	< 1	24.0	44.1	16.3	8.0

The difference in the reaction products obtained by the presently claimed process in comparison with the processes of Bader is evident in Table 3 above. The difference is reflected in the product mixture, for example, in the relative amounts of EDTDMA (1, 2-ethanedithiol dimethacrylate), monoadducts, diadducts and triadducts. It is readily evident from Table 3 that the inventive examples (i.e., B1-B4) have substantially different product mixtures in comparison to Comparative Examples VB1-VB3.

Table 1 of page 30 (reproduced below for convenience) provides the molar ratios of the ethanedithiol and methacrylic acid reacted to form the polymerizable monomer mixture. As is shown below each of Comparative Examples VB1 and VB3 use more than 2.0 moles of a compound of formula III of present Claim 1 (e.g., methacrylic acid) for each mole of compound of formula IV of present Claim 1 (e.g., ethane dithiol).

Table 1: substances used

	1, 2-Ethane-dithiol [mol]	MAA [mol]	NaOH [mol]	Solvent
VB1	1	2.100	2.300	Methyl tert-butyl ether
VB2	1	1.520	1.500	Methyl tert-butyl ether
VB3	1	2.100	2.300	Ethyl acetate
B1	1	1.520	1.760	Ethyl acetate
B2	1	1.520	1.760	Ethyl acetate
B3	1	1.450	1.692	Ethyl acetate
B4	1	1.450	1.692	Ethyl acetate

Applicants submit that the substantial difference in product mixtures obtained from the claimed process in comparison to the comparative process (i.e., Bader) may not have been foreseen but for the disclosure of the present application. The Office has put forth no reasonable technical argument why one of ordinary skill in the art would be able to foresee such a difference in the product mixture upon changing the relative ratio of the starting materials.

Furthermore, Applicants showed that polymerization of the resulting product mixture provides a plastic material of significantly different characteristics in comparison to the plastic material obtained from the polymerizing of Bader. It is disclosed on page 31 of the present specification that the plastic material obtained from the product mixture made according to the process recited in present independent Claim 1 has a substantially higher index of refraction (i.e., 1.6169) in comparison to the index of refraction for the comparative example of Bader (i.e., 1.6079). Moreover the plastic material of the invention has a higher ABBE number (e.g., 38.9 vs. 35).

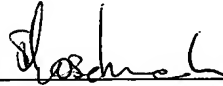
Applicants submit that the data of the present specification demonstrate that a change in the molar ratio of the starting materials used to prepare compounds of formula I and II recited in present independent Claim 1, provide a polymerized plastic material that is different from the plastic material obtained by the process of Bader. The fact that this difference is substantial is demonstrated by Applicants' showing that the inventive process may provide a plastic of improved optical characteristics having, for example, improved index of refraction and ABBE number.

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Reply to Office Action of October 3, 2005.

For the reasons discussed above, Applicants submit that the rejection of the present claims should be withdrawn and all now-pending claims should be allowed.

Respectfully submitted,

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